

WHAT IS CLAIMED IS:

1. A method of producing a formulation comprising:
 - (a) mixing
 - (i) a cationic surfactant;
 - (ii) a polyoxyethylene (POE) and polyoxypropylene (POP) block copolymer; and
 - (iii) a polynucleotide;at a temperature below the cloud point of said block copolymer to form a mixture; and
 - (b) cold filtering the mixture to produce a sterile formulation.
2. The method of claim 1, further comprising:
 - (c) raising the temperature of the mixture above the cloud point of said block copolymer prior to step (b).
3. The method of claim 1, further comprising:
 - (c) raising the temperature of the mixture above the cloud point of said block copolymer after step (b).
4. The method of claim 1, further comprising:
 - (c) raising the temperature of the mixture above the cloud point of said block copolymer prior to step (b);
 - (d) lowering the temperature to below the cloud point of said block copolymer; and
 - (e) repeating steps (c) and (d) about 1 to about 50 times prior to step (b).
5. The method of claim 1, further comprising:
 - (c) raising the temperature of the mixture above the cloud point of said block copolymer after step (b);

(d) lowering the temperature to below the cloud point of said block copolymer; and

(e) repeating steps (c) and (d) about 1 to about 50 times.

6. The method of any one of claims 1-5, further comprising aliquoting said formulation into a suitable container.

7. The method of any one of claims 1-5, wherein said block copolymer is of the general formula:

$\text{HO}(\text{C}_2\text{H}_4\text{O})_x(\text{C}_3\text{H}_6\text{O})_y(\text{C}_2\text{H}_4\text{O})_x\text{H}$; wherein (y) represents a number such that the molecular weight of the hydrophobic POP portion ($\text{C}_3\text{H}_6\text{O}$) is up to approximately 20,000 daltons and wherein (x) represents a number such that the percentage of the hydrophilic POE portion ($\text{C}_2\text{H}_4\text{O}$) is between approximately 1% and 50% by weight.

8. The method of any one of claim 7, wherein said block copolymer is the poloxamer CRL-1005.

9. The method of any one of claims 1-5, wherein said block copolymer is of the general formula: $\text{HO}(\text{C}_3\text{H}_6\text{O})_y(\text{C}_2\text{H}_4\text{O})_x(\text{C}_3\text{H}_6\text{O})_y\text{H}$ wherein (y) represents a number such that the molecular weight of the hydrophobic POP portion ($\text{C}_3\text{H}_6\text{O}$) is up to approximately 20,000 daltons and wherein (x) represents a number such that the percentage of hydrophilic POE portion ($\text{C}_2\text{H}_4\text{O}$) is between approximately 1% and 50% by weight.

10. The method of any one of claims 1-5, wherein the cationic surfactant is selected from the group consisting of benzalkonium chloride, benethonium chloride, cetrimide, cetylpyridinium chloride, acetyl triethylammonium chloride, Bn-DHxRIE, DHxRIE-OAc, DHxRIE-OBz and Pr-DOctRIE-OAc.

11. The method of claim 1, wherein step (a) is performed at a temperature of about -2°C to about 8°C.
12. The method of claim 2, wherein said step (c) is performed at a temperature of about 8°C to about 35°C.
13. The method of claim 3, wherein said step (c) is performed at a temperature of about 8°C to about 35°C.
14. The method of claim 4, wherein said step (c) is performed at a temperature of about 8°C to about 35°C.
15. The method of claim 5, wherein said step (c) is performed at a temperature of about 8°C to about 35°C.
16. The method of claim 4, wherein said step (d) is performed at a temperature of about -2°C to about 8°C.
17. The method of claim 5, wherein said step (d) is performed at a temperature of about -2°C to about 8°C.
18. The method of any one of claims 1-5, wherein said cold filtering is performed at a temperature of about -2°C to about 8°C.
19. The method of any one of claims 1-5, wherein said cold filtering is performed using a filter with a pore size of about 0.01 microns to about 2 microns.
20. The method of any one of claims 1-5, wherein the final concentration of said cationic surfactant present in said formulation is from about 0.01mM to about 5mM.

21. The method of any one of claims 1-5, wherein the final concentration of said block copolymer present in said formulation is from about 1 mg/mL to about 50 mg/mL.
22. The method of any one of claims 1-5, wherein the final concentration of said polynucleotide molecules present in said formulation is from about 1 ng/mL to about 10 mg/mL.
23. A cationic lipid selected from the group consisting of: Bn-DHxRIE, DHxRIE-OAc, DHxRIE-OBz and Pr-DOctRIE-OAc.
24. The cationic lipid of claim 23, wherein said lipid is Bn-DHxRIE.
25. The cationic lipid of claim 23, wherein said lipid is DHxRIE-OAc.
26. The cationic lipid of claim 23, wherein said lipid is DHxRIE-OBz.
27. The cationic lipid of claim 23, wherein said lipid is Pr-DOctRIE-OAc.